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RESEARCH NOTE

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RATES AND DATES OF SHORTLEAF PINE SEED FALL

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A recent study reveals that shortleaf pine (*Pinus echinata* Mill.) seed fall generally begins in October and ends in February on the Cumberland Plateau in Kentucky. Nearly all the seed falls by the end of December. About one-third of the seeds are viable. This can be useful information to the woodland manager who relies on natural shortleaf pine regeneration.

The Study

The study was conducted on eight 2 1/4-acre plots located in mature pine-oak stands. In 1956 a harvest cutting was made leaving 6 shortleaf pine seed trees per acre on four of the eight plots and 15 seed trees per acre on the others. The best shortleaf pine seed trees available, based on size, form, and past seed production, were left as uniformly distributed over the plots as possible.

Twelve seed traps were evenly spaced in each plot. These traps were inspected over a 5-year period at approximately 1- to 2-week intervals between October 1 and February 7.

Seed viability was determined by cutting tests except for seeds collected in 1956. In that year actual germination studies were made.

Results and Discussion

Seed fall began between the third week in October and the first week in November. About three-quarters of the seed fell during the month of November, and by the end of December 95 percent of the seed had fallen.

During the 5-year period, daily seed fall reached its peak by the third week in November (fig. 1). By the last week in December the seed fall had become light and scattered. Only negligible amounts of seed were caught in the traps after the first of February.

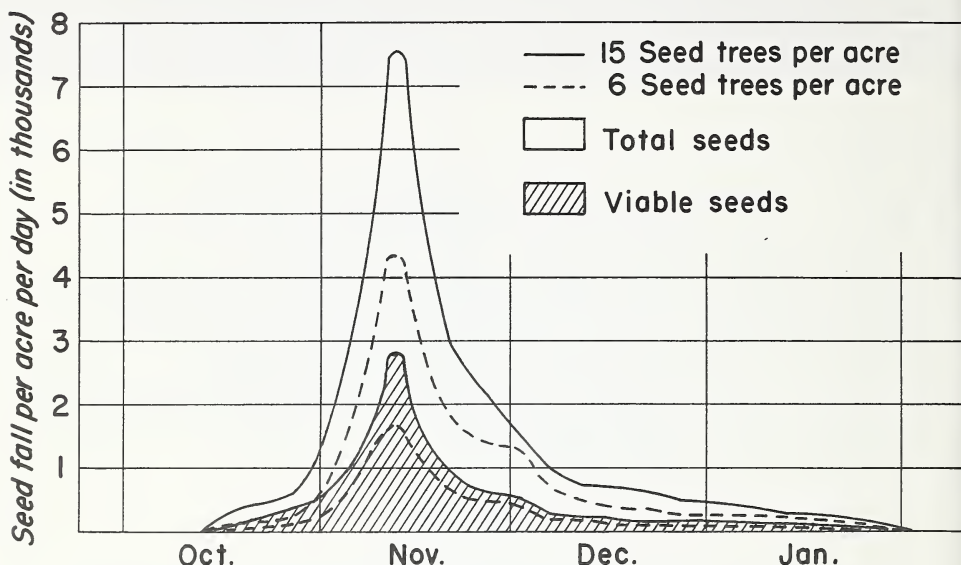


FIGURE 1.--Shortleaf pine total and viable seed fall per acre per day for two seed tree densities, 1956-1960.

The average viability of the seed for the 5-year period was about one-third of the total seed fall. Haney in 1957^{1/} and Perry and Coover in 1933^{2/} found shortleaf pine seed viability to be about 50 percent.

Because shortleaf pine requires mineral soil for a seed bed, the manager should scarify the ground before the seed falls. Our study shows that in the Cumberland Plateau area the ground treatment should be completed by October 15. If the ground is scarified much before this, litter

^{1/} Haney, G. P. Seed production of shortleaf pine in the Piedmont. U.S. Forest Serv. Southeast. Forest Expt. Sta. Res. Note 113, 2 pp., illus. 1957.

^{2/} Perry, G. S., and Coover, C. A. Seed source and quality. Jour. Forestry 33: 19-25, illus. 1933.

will cover the mineral soil before seed fall. If scari-fied much later, the prepared ground may not receive enough seeds.

Under both seed tree densities adequate numbers of seedlings were established after the first growing season: 7,500 seedlings per acre on the low seed tree density plots and 9,900 seedlings on the high density plots.^{3/}

However, after the third growing season, the difference in number of seedlings was not significant^{4/} because the plots with 15 seed trees per acre lost many more seedlings to competition than the 6-tree plots. Although 6 seed trees per acre appear to be an adequate seed source, it may be advisable to keep at least 8 to 10 seed trees as insurance against seed tree mortality or poor seed years.

Rufus H. Allen, Jr., research forester
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^{3/} Dale, M. E. Ground treatment and seed supply influence establishment of shortleaf pine reproduction. U.S. Forest Serv. Cent. States Forest Expt. Sta. Note 119, 2 pp., illus. 1958.

^{4/} Sander, I. L. Ground treatment is important in establishing shortleaf pine reproduction. 1963. (In preparation for publication, U.S. Forest Serv., Cent. States Forest Expt. Sta., Athens, Ohio, field office.)

